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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/960,422 | 09/21/2001 | Teemu Kaiponen | 297-010484-US(PAR) | 5561 |

2512 7590 06/23/2005

PERMAN & GREEN
425 POST ROAD
FAIRFIELD, CT 06824

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| EXAMINER |
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ENG, GEORGE

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| ART UNIT | PAPER NUMBER |
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2643

DATE MAILED: 06/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/960,422

Applicant(s)

KAIPONEN ET AL.

Examiner

George Eng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office action is in response to the amendment filed 2/2/2005. Accordingly, claims 3 and 7 are canceled and claims 1-6 and 8-17 are pending for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-6 and 8-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US PAT. 5,945,954) in view of Akiba et al. (US PAT. 5,491,301 hereinafter Akiba) and Levi (US PAT. 6,121,931).

Regarding claim 1, Johnson discloses a planar antenna (10, figure 5) for use in a portable communication device, i.e., a mobile station (12, figure 3), comprising a planar antenna including a ground plane (23, figure 4b) and a planar radiator element (20, figure 4b), which is disposed substantially parallel to the ground plane with a space (24, figure 4b) there between, and the portable communication device including a printed wired board, i.e., an inherent ground plane of the mobile station, which is located substantially parallel to the ground plane and the radiator element, wherein the ground plane covers a first area of the printed wired board and the radiator element covers a second area on the printed wired board (abstract and col. 3 line 28 through col. 4 line 45). Johnson differs from the claimed invention in not specifically teaching the antenna assembly comprising a layer of low reluctance material, which layer is substantially parallel to the printed wired board and covers a third area on the printed wired board, and the layer of low reluctance material is so located that the third area on the printed wired board is at least in part outside the first and second areas on the print wired board. However, Akiba teaches a shielding technique to utilize a sheet-like wave absorber, i.e., a layer of low reluctance material, in the vicinity of the interlayer connection portion in a circuit board for reducing electromagnetic radiation noise within the circuit board (figure 1 and col. 5 line 21 through col. 6 line 54). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Johnson in having the layer of low reluctance material, which layer is substantially parallel to the printed wired board and covers a third area on the printed wired board, and the layer of low reluctance material is so located that the third area on the printed wired board is at least in part outside the first and second areas on the print wired board, as per teaching of Akiba, in order to reduce electromagnetic radiation noise within the circuit

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board. Furthermore, neither Johnson nor Akiba specifically teaches that the space between the radiator element and the ground plane is substantially air, thus forming an air gap. However, Levi teaches to utilize an air gap applied to edges of separated layers instead of a dielectric substrate to separate between different layers in a planar antenna assembly, thereby maintaining their separation (col. 7 line 63 through col. 8 line 5). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of Johnson and Akiba in having the space between the radiator element and the ground plane being substantially air, thus forming the air gap, as per teaching of Levi, in order to maintain the separation.

Regarding claim 2, Akiba discloses the low reluctance covering a high intensity RF current area on the printed wired board for reducing the RF current intensity on the area (col. 7 lines 27-65).

Regarding claim 3, Akiba discloses the low reluctance material as the sheet-like absorber made of ferromagnetic material for reducing electromagnetic radiation noise in the vicinity of the interlayer connection portion in the circuit board (col. 6 lines 38-46) so that the low reluctance material is a flexible ferrite sheet.

Regarding claim 4, Johnson discloses the mobile station including a display unit (figure 3).

Regarding claim 5, it is old and notoriously well known in the art of a display unit comprising a light guide for make user friendly so that one skill in the art would recognize to attach the layer of low reluctance material to the light guide in order to improve antenna efficiency (col. 2 lines 11-15).

Regarding claim 6, Akiba discloses the low reluctance material being attached to the ground plane (figure 1 and col. 6 lines 22-46).

Regarding claims 8-9, Johnson discloses the ground plane being formed of a conductive layer of the printed wired board, which is nearest to the radiator element (col. 4 lines 26-33).

Regarding claim 10, Johnson discloses the planar antenna being located at the end of the printed wired board (figure 1), and Akiba to place the low reluctance material in the vicinity of the interlayer connection portion in the circuit board (col. 6 lines 38-46) so that one skill in the art would recognize to located the low reluctance material at a distance from the end of the printed wired board.

Regarding claim 11, Johnson teach to incorporate the planar antenna for portable communication device (abstract) so that one skill in the art would recognize the printed wired board to connect the planar antenna to other electronics of the portable communication device.

Regarding claim 12, the limitations of the claim are rejected as the same reasons set forth in claim 1.

Regarding claim 13, the limitations of the claim are rejected as the same reasons set forth in claim 2.

Regarding claim 14, the limitations of the claim are rejected as the same reasons set forth in claim 3.

Regarding claim 15, the limitations of the claim are rejected as the same reasons set forth in claim 5.

Regarding claim 16, the limitations of the claim are rejected as the same reasons set forth in claim 10.

Regarding claim 17, the limitations of the claim are rejected as the same reasons set forth in claim 11.

Response to Arguments

4. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

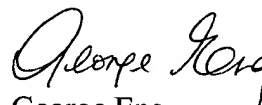
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Eng whose telephone number is 703-308-9555. The examiner can normally be reached on Tue-Fri 7:30 AM-6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis A. Kuntz can be reached on 703-305-4708. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



George Eng
Primary Examiner
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